

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
15 December 2005 (15.12.2005)

PCT

(10) International Publication Number
WO 2005/119722 A1

(51) International Patent Classification⁷: **H01J 1/30**

Apt. 110-802, Shinsung-dong, Yuseong-gu, Daejeon
305-707 (KR).

(21) International Application Number:
PCT/KR2005/001664

(74) Agent: **SHIN, Young Moo**; Ace Tower 4th Floor 1-170,
Soonhwa-dong, Chung-gu, Seoul 100-130 (KR).

(22) International Filing Date: 3 June 2005 (03.06.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10-2004-0041014 4 June 2004 (04.06.2004) KR

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KM, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MY, NA, NG, NI, NO, NZ, OM,
PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM,
SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN,
YU, ZA, ZM, ZW.

(71) Applicant (for all designated States except US): **ELEC-
TRONICS AND TELECOMMUNICATIONS RE-
SEARCH INSTITUTE [KR/KR]**; 161, Gajeong-dong,
Yuseong-gu, Daejeon 305-350 (KR).

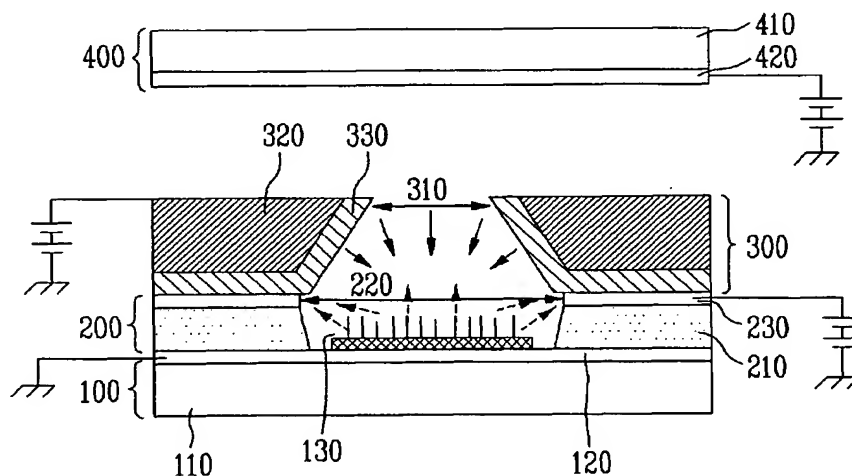
(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,
SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,
GQ, GW, ML, MR, NE, SN, TD, TG).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **SONG, Yoon
Ho [KR/KR]**; Woosung Apt. 127-405, Jeongrim-dong,
Seo-gu, Daejeon 302-795 (KR). **LEE, Jin Ho [KR/KR]**;
Hanbit Apt. 108-1803, Eoeun-dong, Yuseong-gu, Daejeon
305-333 (KR). **KANG, Kwang Yong [KR/KR]**; Hanwool

[Continued on next page]

(54) Title: FIELD EMISSION DEVICE AND FIELD EMISSION DISPLAY DEVICE USING THE SAME



(57) Abstract: Provided are a field emission device and a field emission display device using the same. The field emission device includes a cathode portion having a substrate, a cathode electrode formed on the substrate, and a field emitter connected to the cathode electrode; a field emission-suppressing gate portion formed on the cathode portion around the field emitter and surrounding the field emitter; and a field emission-inducing gate portion having a metal mesh with at least one penetrating hole, and a dielectric layer formed on at least a part of the metal mesh, wherein the field emission-suppressing gate portion suppresses electrons from being emitted from the field emitter, and the field emission-inducing gate portion induces electrons to be emitted from the field emitter. According to this configuration, the conventional problems of the field emission device including a gate leakage current, electron emission caused by an anode voltage, electron beam divergence can be significantly improved.

WO 2005/119722 A1



Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.